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ntosb Quadra 840AV

pages contain technical information about
Quadra 840AV:

our Macintosh

errupt commands

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▲ **Warning:** If you have a problem with your computer and nothing in the manuals that came with the computer solves the problem, consult the service and support information that came with your computer for information on how to contact an Apple-authorized service provider or Apple for assistance. ▲

Expanding your Macintosh

Your Macintosh computer was designed to grow with your needs: you can add new capabilities or improve its performance as you wish. Like all Macintosh computers, it allows you to plug in a number of external devices into its ports. In addition, it allows you or your dealer to install a number of enhancements within the case that houses the computer.

You can install the items listed below. Apple recommends that you have this equipment installed by an Apple-authorized dealer.

- additional dynamic RAM (DRAM), up to a total of 128 MB, to increase the amount of memory your Macintosh can use for its computations
- additional video RAM (VRAM), up to a total of 2 MB, to increase the numbers of grays or colors your monitor can display
- an internal 5.25-inch device (if one isn't already installed), such as a CD-ROM player or removable hard disk

You can install the following yourself:

- up to three NuBus™ cards, such as special cards
- a card that uses the DAV connector, for digital audio/video digitizing hardware (uses one

Choosing the right component

As explained in the next two sections, you must make sure each component you add is compatible with your Macintosh and does not exceed its maximum power allo-

Compatibility

In general, your dealer or the manufacturer of the component should be able to tell you which components are compatible with your Macintosh. However, you might find some components useful:

- In general, NuBus cards designed for the Macintosh family of computers also work with the Macintosh Plus and Quadra 840AV.

sh Quadra 840AV uses 32-bit-wide, 72-pin Inline Memory Modules (SIMMs). Your SIMMs are fast-paged mode 60 nanosecond access time or faster. SIMMs from older computers are not compatible. For more information, see "RAM Configurations" later in

SIMMs must be 80 ns access time or faster.

ances

Quadra 840AV meets Apple's NuBus power check the information that came with your to make sure the card does not exceed these

ed information, see "Expansion Cards and this booklet.

Reset and interrupt commands

The Macintosh Quadra 840AV uses keyboard commands, rather than switches on the computer's case, to interrupt or reset the system. These commands are

- -Power key for Interrupt
- -Control-Power key for Reset

See the *Macintosh User's Guide* for information about using these commands.

Specifications

The hardware specifications for the Macintosh Quadra 840^w are listed below.

Main unit

Processors

- Motorola MC68040, 32-bit architecture, 40 megahertz (MHz) clock frequency (includes built-in memory-management unit) with built-in floating-point unit (FPU) and 8K cache
- AT&T DSP 3210 digital signal processor, 66.67 MHz clock frequency (used primarily for sound, speech recognition, and telecommunications; can be used for additional processing tasks)

Memory (RAM)

- A minimum of 8 megabytes (MB) RAM, expandable to a maximum of 128 MB
- 2 MB read-only memory (ROM)
- 256 bytes of non-volatile parameter memory

Video RAM

- The Macintosh Quadra 840^w comes with 1 MB of video RAM (VRAM) built in, expandable to a maximum of 4 MB
- Maximum live video window size at a color resolution of 640 x 480 pixels for NTSC, 768 x 576 pixels for Secam

△ **Important:** When a video image is displayed on the monitor, RAM available for the standard graphics display is reduced. Video display is not supported when the monitor is using the maximum number of colors or when a PAL or NTSC monitor is set to a non-video format. △

colors and size of image (in pixels) that a display depends on the amount of VRAM Macintosh Quadra 840A¹ can use all the VRAM (the standard desktop, icons, and so on) the VRAM between graphics and video

: Video can be displayed in either 8-bit gray thousands of colors. Monitors with a resolution of 832 x 624 will only display 8-bit gray scale. Δ

that follow show the image size for various monitors with the number of colors or grays for 1 MB of optional 2 MB of VRAM.

colors or grays for graphics only (no video) so that all available VRAM is dedicated to video shows colors or grays when VRAM is used for graphics and a window displaying live

Table 1 Colors or Grays Supported Using Graphics Only

Monitor	Resolution	1 MB VRAM	2 MB VRAM*
12" Color	512 x 384	millions	millions
12" Color	560 x 384	millions	millions
12" Monochrome	640 x 480	256	256
13" or 14" Color			
or VGA	640 x 480	thousands	millions
13" Color	640 x 400	millions	millions
15" Portrait Mono	640 x 870	256	256
16" Color	832 x 624	thousands	millions
19" Color	1024 x 768	256	thousands
21" Color	1152 x 870	256	thousands
SuperVGA	800 x 600	thousands	millions
NTSC	640 x 480	thousands	millions
NTSC flicker-free	640 x 480	256	256
NTSC	512 x 384	millions	millions
NTSC flicker-free	512 x 384	256	256
PAL	768 x 576	thousands	millions
PAL flicker-free	768 x 576	256	256
PAL	640 x 480	thousands	millions
PAL flicker-free	640 x 480	256	256

* Optional expansion to 2 MB of VRAM

Table 2 Colors or Grays Supported Using Graphics and Video In a Window

Monitor	Resolution	1 MB VRAM	2 MB V
		Graphics	Graphics
12" Color	512 x 384	thousands	millions
12" Color	560 x 384	thousands	thousands
12" Monochrome	640 x 480	256	256
13" or 14" Color or VGA	640 x 480	thousands	thousands
13" Color	640 x 400	thousands	thousands
15" Portrait Mono	640 x 870	16	256
16" Color	832 x 624	256	thousands
19" Color	1024 x 768	16	256
21" Color	1152 x 870	16	256
SuperVGA	800 x 600	256	thousands
NTSC	512 x 384	thousands	thousands
NTSC flicker-free	512 x 384	256	256
NTSC	640 x 480	256	thousands
NTSC flicker-free	640 x 480	256	thousands
PAL	640 x 480	256	thousands
PAL flicker-free	640 x 480	256	thousands
PAL	768 x 576	256	thousands
PAL flicker-free	768 x 576	256	256

* Optional expansion to 2 MB of VRAM

† NTSC and PAL monitors cannot display video when set to flicker-free format.

- Output SNR*: 85 dB with no audible discrete tones
- Bandwidth: 20 Hz–20 kHz (+/- 2 dB) at 44.100kHz sample rate
- THD + N*: Less than 0.05%; measured 20 Hz–20 kHz with a 1 Vrms sine wave input

* SNR, signal-to-noise ratio; THD + N, total harmonic distortion plus noise

Interfaces

- One Apple Desktop Bus (ADB) port supports a keyboard, mouse, and other devices daisy-chained through a low-speed, synchronous serial bus (recommended maximum of three devices)
- Monitor port supports color and monochrome monitors of various sizes and resolutions
- Internal expansion slots support three NuBus expansion cards, one of which can use the DAV connector
- Two RS-232/RS-422 serial ports, 230.4 Kbit per second maximum (up to 2.048 Mbit per second if clocked externally)
- Built-in Apple Ethernet for connecting to high-speed Ethernet networks

Drive 1.4 MB high-density floppy disk drive
ble SCSI hard disk drive (1/3-height or 1/2-

ernal, 5.25-inch, 1/2-height SCSI drive, such
M player

on of up to seven internal and external SCSI
be used

nd circuitry, including stereo generator
riving miniature phone jack headphones or
ment. Also includes stereo sampling
r recording samples.

in and out
s of 48, 44.1, 24, and 22.05 kilohertz (kHz)
vel: 1 volt peak-to-peak
level: 1 volt peak-to-peak
82 decibels (dB) with no audible discrete

- SCSI interface supports up to seven SCSI devices
- Video output ports (composite and S-video) for output to video devices or a television
- Video input ports (composite and S-video) for video devices
- Sound output port for stereo compact disc audio and stereo computer-generated sound
- Sound input port for stereo sound input

A/C line input

- Line voltage: 100–240 volts AC, RMS single phase, automatically configured
- Frequency: 50–60 Hz
- Power: 454 watts maximum, not including monitor power

A/C line output

- Output receptacle: 100–240 volts AC, RMS (determined by actual input voltage); 3 ampere maximum (100–120 volts)

DC power

- 200 watts maximum

Current type	Total
+5 volt	26.1 amps
+12 volt	5 amps
–12 volt	0.75 amp

Clock/calendar

- CMOS custom circuitry with long-life lithi-

Keyboard

- Supports all Apple ADB keyboards

Mouse

- Supports all models of the Apple ADB mouse

Apple PlainTalk Microphone (optional)

- The microphone is unidirectional and operates with speech recognition

Configurations

RAM chips in packages called Single Inline Memory Modules (SIMMs).

RAM chips can work with any of several RAM configurations depending on the density of the RAM chips used on the SIMMs. The 72-pin SIMMs used in the Quadra 840av come in sizes of 4, 8, 16, and 32 MB.

Warning: The SIMMs should be fast-paged mode (FPM) and (ns) RAM access time or faster. The Quadra 840av supports 100 ns, 120 ns, and 150 ns SIMMs will not work in your model, and SIMMs from older Macintosh computers are not compatible. Consult an authorized dealer or service provider for more information about this or any other warranty question. ▲

▲ **Warning:** To avoid damage to your computer, Apple Computer recommends that only an Apple-authorized dealer or service provider install additional RAM. If you attempt to install additional RAM yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer. See an Apple-authorized dealer or service provider for additional information about this or any other warranty question. ▲

Power requirements

Apple Desktop Bus

- Maximum power draw for all ADB devices: 500 mA
- Mouse draws up to 10 mA
- Keyboard draws 25–80 mA (varies with keyboard model used)

◆ **Note:** The ADB port can support up to a total of three ADB devices. ◆

Audio, video, and telecommunications devices

Power allowances for external devices connected to input ports:

Device	Voltage	Current (amperes)	Power (watts)
Microphone	+5	20 mA	100 mW
Camera/S-video	+12	500 mA	6 W
GeoPort Telecom Adapter	+5	500 mA	2.5 W

Expansion cards and devices

If you add an expansion card, a 5.25-inch device, or a hard disk drive to your Macintosh computer, make sure the component doesn't exceed its maximum power allowance from the different voltage sources. Follow the

Device	Voltage	Current (amperes)
NuBus card (per slot)	+5 +12 -12	2 0.1 0.1
3.5-inch and 5.25-inch device (such as a CD-ROM drive)	+5 +12 +12 peak*	9 3 7.5

* Peak power is for startup only and must not occur in normal operation.

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Height	Width	Depth
360 mm 14.25 in.	196 mm 7.75 in.	396 mm 16 in.
33 mm 1.3 in.	61.7 mm 2.4 in.	107.3 mm 4.2 in.

n type of hard disk. May be greater if a 5.25-inch device,
ve, is installed.

Environment

Operating temperature

- 10° C to 40° C (50° F to 104° F)

Storage temperature

- -40° C to 47° C (-40° F to 116.6° F)

Relative humidity

- 5% to 95% (noncondensing)

Altitude

- 0 to 3048 m (0 to 10,000 ft.)

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